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## CULTURAL SEQUENCES IN HOKKAIDO, JAPAN

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The present archeological field work was carried on during 1953-54 as a part-time project. I was assisted at times by Japanese friends and hired laborers. The work was necessarily limited to the area of Hokkaido lying between the Ishikari River on the north, and the south coast of the island through the narrow isthmus known as the Ishikari Plain (see the map, fig. 1). This area of the island is the most heavily populated and the most accessible by road and railroad from the capital, Sapporo, where I lived and worked. The collections made during these explorations have been given to the U.S. National Museum (Accession No. 209693). The 6-digit number that accompanies descriptions of artifacts is the Museum catalog number. Field notes and unpublished photographs have also been placed in the Museum.

The explorations consisted mainly of reconnaissance trips to locate new sites and to visit known archeological sites in the area. In this work I was advised by two able and willing friends: Doctor S. Kodama, head of the Medical Department of Hokkaido University and an authority on Ainu physical anthropology; and Father Gerhardt Huber, German missionary-teacher and long-time student of the

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Ainu people and Hokkaido in general. I take this opportunity to express again my deep appreciation to both these men for their many kindnesses and their valuable help.

Ever since the opening of Japan to Westerners in the mid-1800's, students have speculated about the identity and relationships of the Ainu people of northern Japan. Anthropologists who have studied them have arrived at no firm conclusions as to their nearest kin, their original home, or their prehistory. Among Japanese students the belief has long been current that the Ainu were the aborigines of Japan proper, and that they were forced northward to their present homes in Hokkaido, Sakhalin, and the Kuriles by the overwhelming power of the Japanese race—the Yamato people.

The teaching of State Shintoism during the years between the Restoration (1868) and the end of World War II stressed the divine descent of the Japanese from the mythical deities, Izanagi and



FIGURE 1.—Map of Hokkaido, Japan.

Izanami. Nothing could be published that conflicted with this myth. In such a repressive atmosphere, no Japanese dared undertake the necessary research to identify the people of the shell mounds or to establish once and for all the identity of the Ainu. Since 1945 archeological work by both Japanese and Westerners has begun to illuminate the problems and to hint at solutions.

Archeological work in Hokkaido has been greatly neglected, though sites attributable to prehistoric cultures and to historic Ainu and Yamato occupancy are numerous. These sites comprise shell mounds, caves, stone "circles," earthen-walled enclosures, quarry workshops, groups of still-visible housepits, and many sites yielding both ceramic and nonceramic artifacts in topsoil of varying depths. Surface collections indicate occupancy of these sites during the entire range of the Jomon Period, as well as during the protohistoric and historic eras. Dates for these periods are unknown, but the Jomon Period is Japan's Neolithic Period and occurred possibly from 3000 B.C. to A.D. 500, while the historic era begins about A.D. 1400. In addition, many sites yield only implements of flint and obsidian and may well be of preceramic age.

#### Taniguchi Site

The Taniguchi Site is on the left bank of the Ishikari River, 1 kilometer west of the town of Barato, 13 kilometers north of Sapporo. The site is at the northeastern tip of a sandy terrace that abuts on the river at this point, as well as at other points to the west. This sandy terrace is of uneven elevation and appears to have originated as beach dunes at some time in the geologic past, when the mouth of the Ishikari was near this point. The property is owned by Mr. Jinsaku Taniguchi, of Sapporo, who kindly consented to our making a limited excavation on the site. Since most of the site is occupied by houses, barns, and gardens of the Taniguchi homestead, no major excavation was made. A search of the fields and garden, however, revealed the extent of the refuse-strewn area to be about 2 acres. In a low swale adjacent to the houses the refuse appeared to be concentrated, and this area was selected as the site for a test excavation 5 meters square. The site map (fig. 2) shows the location of the tested area in relation to the houses.

Surface materials found on the site consist of numerous cord-marked (Jomon) sherds, plentiful chips of obsidian and flint, and occasional finished implements such as projectile points, knives, scrapers, celts, and hammerstones. No bones, shells, or other organic materials were found.

The excavations were begun on May 2, 1953, and completed on May 31, 1953. My assistants in this work were Messrs. Hatsuji

Takao, Yukie Kudo, Hichiro Ishibashi, and Isamu Shintani—all of Iwamizawa, Hokkaido. The area to be dug was staked in units of 1 square meter, and each square was dug to hardpan in units of  $12\frac{1}{2}$  centimeters (5 inches).

All material found in each layer and square was kept separate pending washing, sorting, and classifying. Hardpan under the black topsoil was a yellowish-brown sand, and any disturbances due to pits and postmolds were easily detected. Each square was carefully searched for such disturbances, and the few found were plotted on a sketch map of the excavation. Hardpan was usually reached at a depth of 80 centimeters, though two of the three pits reached depths of 130 centimeters. Pit outlines could not be discerned in the black topsoil, and we first became aware of the pits when hardpan was reached. Since the cultural material obtained in the excavation was practically uniform throughout, this failure to detect pit outlines at a higher level is not serious.

At two places (squares 15 and 63) we found the remains of recent burials of infants. No bones remained, but the decayed wood and the nails, cleats, and handles of the coffins were identifiable. In one grave we found a mass of carbonized straw, as if this material had been used for packing the coffin. Also found in each grave were broken china dishes that date back to about 1900 A.D. Neither

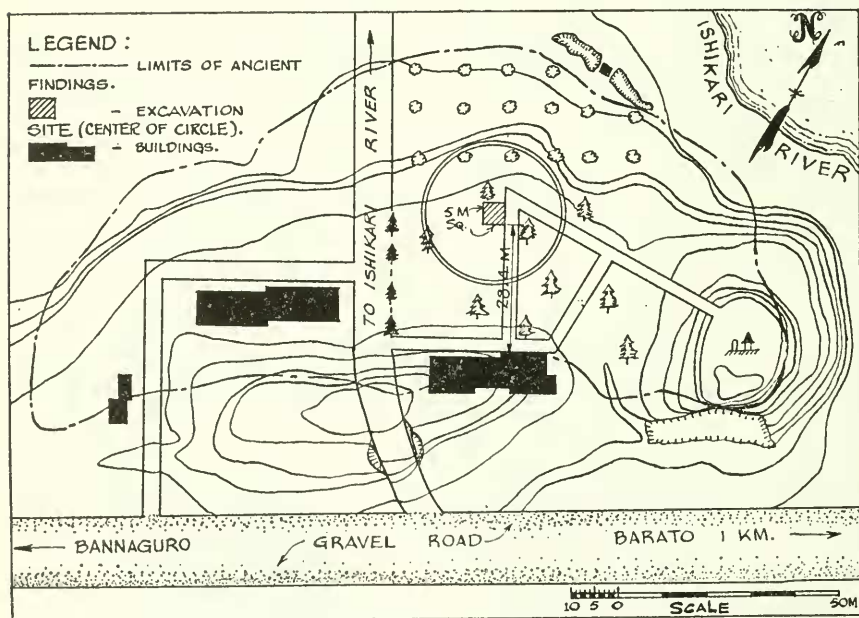


FIGURE 2.—Ground plan of the Taniguchi Site, Ishikari Province, Hokkaido.



TABLE 1.—Pottery traits found at various depths in the Taniguchi site.

Traits	Layers						Totals
	Topsoil	1	2	3	4	5	
Coarse cord, continuous pattern	100	121	157	187	185	134	884
Coarse cord, discontinuous pattern	12	45	20	17	15	17	126
Fine cord marked	4	6	8	0	5	3	26
Plain surface	3	13	6	3	3	7	35
Cord-marked bases	0	0	0	1	1	0	2
Plain bases	4	4	7	6	7	3	31
Obsidian tempering	5	8	14	14	28	20	89
Other grit tempering	110	171	173	199	182	137	972
Fiber tempering	3	6	10	5	11	10	45
"Support perforations"	1	2	1	0	0	2	6
Cord-marked inner rims	3	9	18	7	5	3	45
Added rim strips	8	6	13	12	14	15	68
Added fillet decorations	2	2	5	5	5	5	24
"Pseudocord" designs	0	12	5	10	17	7	51
"Chevron" cord marking	5	9	7	2	4	2	29
Straight rims	13	15	21	27	20	19	115
Everted rims	1	6	5	1	4	1	18
Notched rim tops	1	1	5	5	2	1	15
Punctate rim tops	1	0	0	3	2	3	9
Crenelated rims	3	1	3	2	2	2	13
Hollow drill punctate	3	5	3	4	2	3	25
Solid drill punctate	2	3	10	7	3	2	28
Incised over cord marks	17	22	20	18	24	21	122
Blunt stick incised	5	9	13	9	4	5	45
Pointed stick incised	3	5	4	6	3	4	25
Split reed incised	15	11	11	11	12	15	75
Total rim sherds	15	19	28	28	27	21	138
Total basal sherds	4	4	7	7	8	3	37
Total sherds	121	185	197	217	221	167	1,108

TABLE 2.—Percentages of tempering used in the pottery found at various depths in the Taniguchi site.

Tempering	Layers					
	Topsoil	1	2	3	4	5
Obsidian	4.2	4.3	7.1	6.4	12.7	11.9
Fiber	2.5	3.2	5.0	2.2	4.9	6.1
Other grits	93.3	92.5	87.9	91.4	82.4	82.0

grave exceeded a depth of 70 centimeters, and the tops of the coffins were just below the plowline. The finding of these graves, while having no bearing on the prehistoric nature of the site, is interesting archeological evidence of the disposal during recent times in Hokkaido of infant dead by burial as opposed to the more common cremation. An elderly local woman (possibly aged 70) witnessed the finding of the graves and claimed that she had not known previously of such graves in this garden.

Throughout the squares excavated we found many sherds, chips, stone implements, fire-cracked stones, and flecks of charcoal. No restorable vessels were found, though enough sherds were obtained to show shape and approximate size of the pottery. Typical rimsherds found of Yoichi type (Middle Jomon Period) pottery are illustrated in plates 1 and 2. Careful sorting and comparisons of the pottery from each layer reveal no differences between that from the topsoil and that from the deepest layer. It had been hoped that some indication of cultural change would be detectable in the material from such a deep site, but this hope did not materialize.

A tabulation of ceramic traits from seven squares (1, 2, 3, 4, 5, 13, and 14) that were least likely to have been disturbed by the pit excavations and by the recent graves is shown in table 1 above. The table reflects the strong cultural conservatism in the pottery, which is marked by the absence of change in surface treatment, design, shape, size, or firing. The only change noted is in the tempering material, which shows a gradual decrease in the use of fibers and pulverized obsidian from early to late and a corresponding increase in the use of grit other than obsidian (see table 2 above).

Artifacts found in the 26 square meters consisted of the following:

4000 sherds	1 perforated sherd, 3 cm. square
204 scrapers	1 perforated pebble of chalcedony
22 projectile points	1 partially perforated pendant?
18 celts and fragments	5 tanged knives
17 abrading stones	4 drills, chipped, obsidian
2 chisels with polished blades	

The three pits found were of unknown use or purpose, and they contained no concentration of cultural materials. Their sizes and shapes are as follows:

<i>Pit</i>	<i>Cross-section</i>	<i>Maximum depth</i>	<i>Dimensions (at hardpan)</i>
1	hemispherical	130 cm.	2 × 2½ m.
2	subconoidal	130 cm.	1.2 × 0.6 m.
3	hemispherical	95 cm.	1.0 × 0.5 m.

Charcoal collected from the undisturbed portion of pit 1 below the hardpan level was given a Carbon-14 test by Dr. Meyer Rubin of the

Low Level Radiation Laboratory of the U.S. Geological Survey Radiocarbon Laboratory, and yielded an age of  $3950 \pm 200$  years (W-372).

A comparison of the distribution of stone implements by depth shows no detectable differences in shape, size, or material used. Their types and distribution by depth are shown in table 3. They indicate an intense utilization of the locally available flints as well as obsidian brought from the valley of the Tokachi River, 100 miles to the east. Sandstone and pumice were used for abrasives, and several varieties of basaltic stones were employed in the manufacture of celts and chisels.

TABLE 3.—Stone implements found at various depths in the Taniguchi site.

Artifacts	Layers								Totals	Pits
	Topsoil	1	2	3	4	5	6	7		
Celts and fragments	4	2	5	3	4	0	0	0	18	0
Chisels	1	0	0	0	0	0	1	0	2	0
Abrasive, pumice	0	1	1	0	1	0	0	1	4	2
Abrasive, sandstone	3	1	1	0	3	0	1	1	10	1
Arrowpoints, stemmed	2	2	1	3	4	2	0	0	14	1
Arrowpoints, unidentified	1	2	0	1	1	0	1	0	6	1
Drills	2	0	0	1	0	0	0	0	3	1
Scrapers, flint	1	1	7	3	2	2	0	3	19	1
Scrapers, obsidian	25	20	22	36	41	12	13	6	175	9
Knives, tanged flint	4	0	0	0	1	0	0	0	5	0
Ornaments, perforated	0	0	1	0	0	0	0	0	1	2

The celts found are all flattish and are either rectangular or oval in cross-section. All are small, 7 to 15 centimeters long and 5 to 8 centimeters wide. A few celt "blanks" show that chipping usually preceded grinding in their manufacture. The chisels might be considered miniature celts, as their shape and materials are identical. The celts illustrated in plate 3*a-d* are typical.

Projectile points (plate 4*d-i*) are small, 18 to 60 millimeters in length, and were probably used to tip arrows. All are made of obsidian. The predominant shape has a long, pointed tang, sometimes longer than the main portion of the point.

Knives (plate 3*e-h*) and scrapers (plate 4*a-c*) were probably used interchangeably and are the most common tool at the site. Five of the knives are tanged, of which three are illustrated in plate 3*f-h*. Four of the flake scrapers seem to have been deliberately formed from large flakes (plate 4*a-c*), but the remainder are fortuitous flakes and spalls that show only slight secondary chipping. On a few is chipped a pointed tip for use as a graver or burin.

The abrasives are irregular lumps of pumice or sandstone, though a few are worn through use into thin slabs. Two of the pumice

abraders show rounded, grooved slots, as if they had been used to smooth a round object. Others are flat and may have been used to sharpen celts. One large, flattened boulder of quartzite has a concave depression on each flat side and apparently was used as a whetstone for sharpening celts.

Two stones found may have been intended for use as pendants. One is a pebble of chalcedony (411611) having a natural perforation, though there is some evidence of chipping around the hole. The other specimen is a flat, oval piece of basalt showing a partially drilled hole near one end (411570). No effort had been expended on polishing or otherwise altering the pebbles.

The pottery from the Taniguchi Site seems to be entirely homogeneous ware of the Yoichi type, named after a small town some 30 kilometers west of the Taniguchi Site where identical ware was found. The vessels are cylindrical, with flat bases, and with straight or slightly everted rims. The entire outer surfaces are usually corded, and in many instances the inner surfaces are corded for the top 3 or 4 centimeters. Basal diameters range from 9 to 15 centimeters. Oral diameters are from 10 to 30 centimeters. The ware is usually from 5 to 12 millimeters thick and is generally black or brown, though occasionally a red, yellow, or buff sherd is observed. Designs are common on the rim portions of the vessels. These consist of thickened and overlapping rims, added fillets of clay in various patterns, and various combinations of incised, punctate, and pseudocord designs. The rims illustrated in plates 1 and 2 show typical designs and combinations.

Pottery of the Yoichi type is equated by Groot (1951, p. 54) with the wares of the Middle Jomon Period on Honshu. Similar pottery is found at numerous sites in Hokkaido.

#### Uenae Site

The Uenae Site is located on the right bank of the Bibi River, 9 miles south of Chitose. The site lies on a prominent headland truncated by the Chitose-Tomakomai highway just west of the road leading to the Uenae railroad station. The site was found exposed in the roadcut resulting from highway construction. Since the entire region is buried under nearly 3 feet of geologically recent volcanic ash, no indications of the site show on the surface. Nearby Mount Tarumae, still smoldering today, is undoubtedly the source of the ash.

The site appears to have been a small habitation area, since no extensive refuse is encountered, and the outcrop of cultural material is small. No bones or shells are present in the layers. A typical cross-section of the site is shown in figure 3. Since remains found in

the lower part of layer 3 are identical with those of the upper part of layer 5, the occupants of the site were probably the same before and after the volcanic activity that produced layer 4. No concentrations of refuse or other indications of hasty abandonment of the site were noted at the line of contact between layers 5 and 4. It is presumed therefore that the site was not occupied at the time of the eruption, but how long it had been abandoned is, of course, problematical.

Due to the thickness of the overburden of ashes, no extensive excavation was undertaken. An area 5 feet by 15 feet was laid out

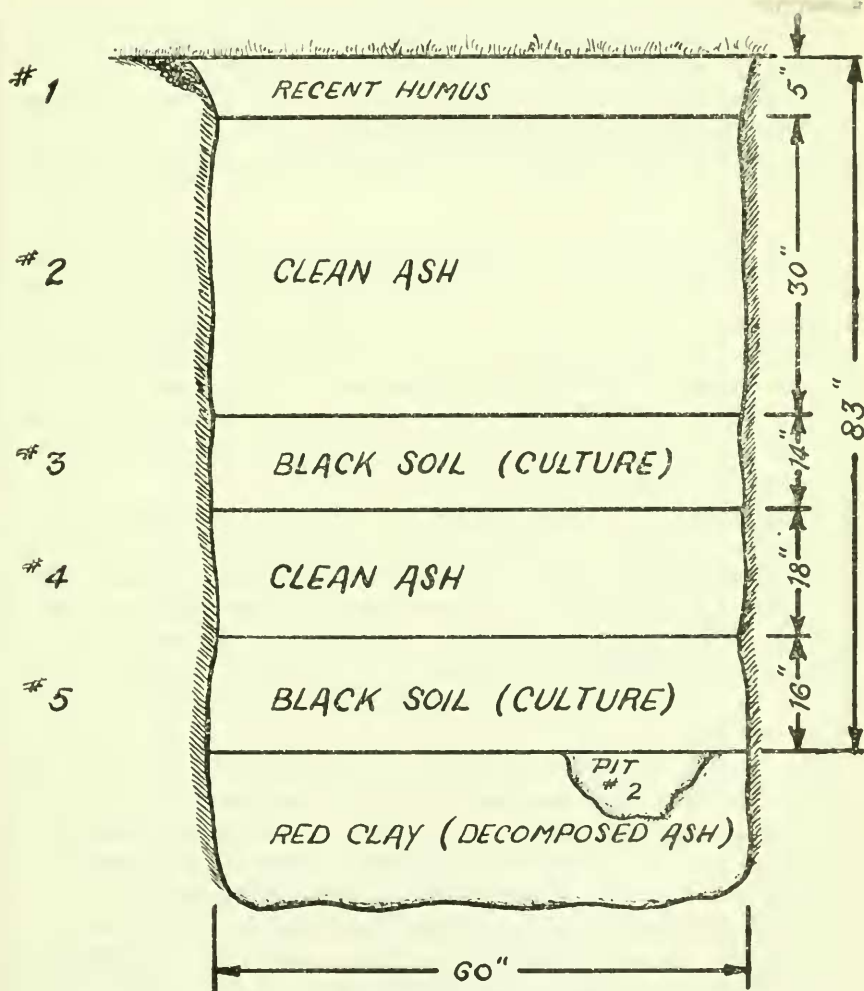


FIGURE 3.—Cross-section of the strata cut at the Uenae Site, Hokkaido.



parallel to the edge of the roadcut and uncovered layer by layer down to hardpan. Layer 5 was removed in two equal increments, and all material found was kept separate for statistical comparisons. The blackness of the soil in layer 5 precluded our finding pit outlines until hardpan was reached. Here two small pits were easily detected. Pit 1 was 12 inches in diameter and extended 14 inches into the subsoil. It contained fire-cracked stones and a few sherds of Noppero type. Pit 2 was 17 inches in diameter and 12 inches deep. This pit contained pottery of two types (Yoichi and Noppero), fire-cracked stones, two broken and incomplete celts, two chipped scrapers, and charcoal, a sample of which was collected for Carbon-14 dating. The test by Dr. Meyer Rubin of the Low Level Radiation Laboratory of the U.S. Geological Survey yielded an age of  $3230 \pm 160$  years (W-322).

The lower half of layer 5 yielded pottery of both Yoichi and Noppero types, while the upper half yielded only Noppero type sherds. No difference could be detected in the types of stone implements from the two zones. No postmolds were found in the excavated area, though they were carefully sought.

Artifacts found include sherds, chipped and polished stone implements, and one ornament made from a naturally perforated pebble of dark green material (plate 5c). The polished stone implements are limited to three broken and incomplete celts, one of which shows the scars of cutting on one side and illustrates the method used to detach the piece from a larger source. One lump of pumice has a groove on one side, the groove indicating use as a smoothing tool, possibly for dressing arrow shafts (plate 5b).

Chipped implements are arrowpoints, drills, scrapers, and knives. The material used is usually obsidian, though flint was also used. Arrowpoints (plate 5e-f) are small, either triangular, or with a small pointed tang. The drills and scrapers (plate 5d) are flakes and spalls, sometimes with only the slightest amount of secondary chipping. The knives are either large flakes with secondary chipping, or are specially made blades with a notched tang at one corner or on one end (plate 5a).

The pottery of Yoichi type (plate 6a-b) is similar to that from the Taniguchi Site. The examples found show oral diameters of from 8 to 15 inches, and wall thicknesses of from  $\frac{3}{8}$  to  $\frac{1}{4}$  inches. Designs are limited to rim thickening and the addition of small lugs at rim level, but extend above the rim to form small crenulations (plate 6c).

The majority of the ware from the Uenae Site is the Noppero type (plate 6, c-e and g-h), which Groot (1951, p. 62) calls "Nohoro" and equates with the Omori type of the Tokyo region. According to Groot (p. 65), the Nohoro type is the probable ancestor of the Kame-

gaoka type of the Final Jomon period in Hokkaido. The Nopporo ware found is thin-walled,  $\frac{1}{8}$  to  $\frac{3}{8}$  inches thick, and is uniformly of bowl shape. Bowls vary from 2 inches to over 12 inches in height. All are grit-tempered and flat-bottomed, and have slightly bulging sides and slightly incurved rims. No spouted bowls or other ornate forms were found.

All the sherds are impressed with a cord-wrapped stick, with the finer cords predominating. Designs are limited to the rim and neck areas and include lines of fingertip impressions, lines of short, vertical slashes filling the space between horizontal incised lines, incised lines paralleling the rim, pseudocord lines paralleling the rim, geometric incised patterns, notched rimpops, and in two instances small rimpop enlargements bearing incised or notched designs. One strap handle covered by closely spaced cord impressions was found. Bases found are either plain or are cord marked. Plate 6, *c-e* and *g-h*, illustrates rimsherds of Nopporo type. Two restorable bowls have the following characteristics:

Bowl 1 (411621) is  $4\frac{1}{2}$  inches high with a plain base 4 inches in diameter. The rim is incurved and is  $6\frac{1}{2}$  inches in diameter. The rimpop is round with thin, slanting incisions on the outer face of the rim. The sides of the bowl are finely cord marked, while design is limited to two incised lines parallel to and within  $\frac{1}{4}$  inch of the rimpop. The bowl is brown on all surfaces but in a few places is soot incrustated.

Bowl 2 (411614) is identical in shape to bowl 1, but is only 3 inches high. The base is cord marked and is 4 inches in diameter. The rim is 7 inches across and is rounded and incurved. Design consists of three pseudocord lines parallel to the rim. The ware is brown with some soot incrustation. This bowl is illustrated in plate 6c.

During the years required for the accumulation of the 14 inches of humus comprising layer 3, the pottery underwent considerable change. In the upper part of layer 3 was one sherd of Ebetsu type, with smooth surfaces and with thin ribbons of clay bearing closely spaced notches covering most of the lower part of the vase. For an illustration of this type, see plate 8a. Also found in layer 3 was a small restorable vase (vessel 3, 411615) of smooth ware. This vase appears to be related to the Haji type of pottery of the Tanaka Site, described below, and of the Ogawara Pithouse Culture of northern Honshu, which is protohistoric. This vase is  $2\frac{3}{4}$  inches high, with a basal diameter of  $1\frac{1}{4}$  inches and an oral diameter of 3 inches. The sides expand from the base to the rim, which is slightly flaring. No design is found on this vase, and the base is smooth, concave, and slightly flanged. The vase is illustrated in plate 6f.

### Tanaka Site

The Tanaka Site is located on the right bank of the Osatsu River, 2 miles southwest of its confluence with the Chitose River. The site lies on a small peninsula formed by the juncture of a small, unnamed creek with Osatsu River. Elevation is about 30 feet above sea level, and about 10 feet above the level of the marshland bordering the two watercourses. The peninsula is level, with gently sloping sides. The site is part of the farm of Mr. Sadaiichi Tanaka, whose house and barns cover portions of the occupied area. Mr. Tanaka reports finding sherds and stone tools in his excavations for potato cellars and other deep diggings. He cooperated wholeheartedly in the plan to excavate on his land and deferred cultivation of the field until our work was completed. For this great kindness, I again express my sincere appreciation.

Since the site had been covered with volcanic ash during relatively recent times, no artifacts were found on the surface. Four round, shallow depressions represent the locations of semisubterranean pit houses. The visible pits are about 30 feet in diameter, with a maximum depth in the center of about 1 foot. Six additional pits are in a wooded area about 30 yards southwest of the Tanaka homestead. In another wooded area, about 200 yards east of the Tanaka Site, on the south bank of Osatsu River, is another group of 10 housepit depressions in an excellent state of preservation. According to a local informant, Ainu graves containing glass beads, iron swords, and similar articles of recent origin had been found when the area was cleared of trees in about 1920. Since the area has been cultivated repeatedly no evidence of the graves is now visible, and testing yielded no indication of graves.

A test excavation 5 feet wide by 10 feet long was made in a portion of the Tanaka Site not showing a housepit, in order to determine normal soil conditions. This test revealed the layer of volcanic ash on the level surface to be 16 inches thick. Beneath this layer a stratum of black soil 20 inches thick was found overlying the brown clay subsoil resulting from the decomposition of earlier volcanic ash deposits.

Throughout the black stratum were scattered sherds, obsidian chips, and occasional stone tools. The sherds (411627) were identifiable as representing several cultural periods: (1) Middle Jomon (Yoichi type pottery); (2) Later Jomon (Nopporo type); and (3) the Epi-Jomon with Ebetsu, Satsumon, and Haji-like wares, whose exact relationships have not yet been defined. Stone implements found are small triangular arrowpoints (411631), a broken celt (411630), and chipped flakes and spalls showing use as scrapers.

At the bottom of the black zone was a small oval hearth, 30 by 26 inches across, identified by the reddish condition of the clay subsoil. This reddening extended 3 inches into the clay. No concentrations of sherds or other remains were found on or near the hearth, and no postmolds were noted in the tested area.

One restorable vase of Haji type (411628) was found in the test trench. This vase is made of grit tempered clay, is brown, and is  $4\frac{1}{2}$  inches high. The base is 2 inches across and is plain and slightly concave. The ware is completely plain, though a line of vertical fingernail impressions parallels the rim  $\frac{1}{2}$  inch from the lip. The rim top is pointed and slightly everted.

A second vase (411629) found in the tested area is not restorable, but is a good example of a globular jar of the Ebetsu type. This jar is grit tempered and yellow. The rim diameter is 3 inches, while the base is  $3\frac{1}{2}$  inches across. The base is plain. The upper half of the vase is covered by six bands, each  $\frac{1}{2}$  inch wide, of horizontal cord impressions, while the lower half is covered by similar marks running vertically. No design is found adjacent to the rim, which is square and slightly everted. Maximum diameter of the globular part of the jar is  $6\frac{1}{2}$  inches. Overall height cannot be determined, due to the lack of essential parts, but it is in excess of 7 inches.

Since it was decided to excavate two of the visible housepits, a base line was staked near the two depressions. This line ran almost due north and south, with both housepits east of the base line. Figure 4 shows the shape, size, and relationships of the two excavated housepits.

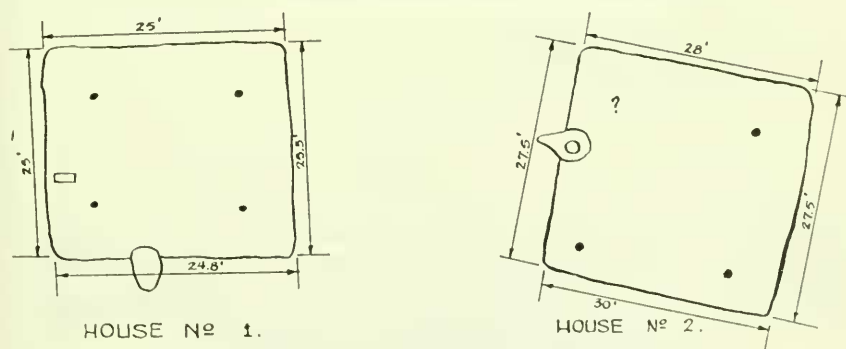
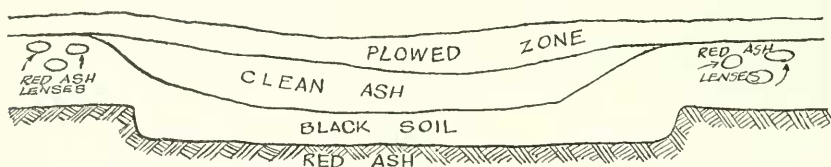


FIGURE 4.—Ground plan of houses 1 and 2 in the Tanaka Site, Hokkaido.

The southern housepit (No. 1) was excavated first. This pit was found to be nearly square, 25 by 25½ feet. The floor was 36 inches below the present ground level. Profiles of the north-south and east-west centerlines are shown in Figure 5. The partial filling of the pit with humus and the obliteration of the sides reveal that the housepit had been abandoned long before the ashfall now forming the surface of the ground. The ashfall was apparently wind driven, since the housepit received a thicker deposit than fell on the surrounding level surface. Cultivation of the surface of the ash has resulted in some intermixture of modern humus with the upper 1 foot of the ash. The cultivation of the field had also tended to level the housepit by dragging in ash and humus from surrounding elevations. A perfect, charred walnut found in the undisturbed ash layer indicates that the area was wooded when the ash fell, and the season of the year was probably fall or winter.

A 3-foot wide trench was dug completely around house 1, thereby outlining the walls formed by the undisturbed subsoil. No artifacts were found in the recent humus or in the volcanic ash. However, in the black humus layer were found hundreds of sherds of both Jomon and Haji provenience. Among these sherds were one complete cup, one restorable vase, and three nonrestorable vases, numbered 1 to 5 inclusive. Stone implements (411642) were few, but include 2 frag-



PROFILE ALONG E-W CENTER LINE  
HOUSE #1, TANAKA SITE, OSATSU

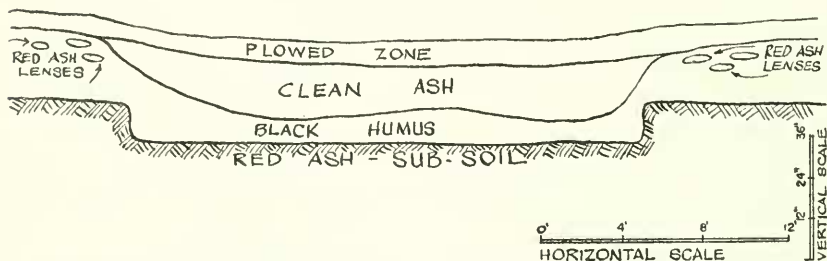


FIGURE 5.—Soil profile along N.-S. center line of house 1 in the Tanaka Site, Osatsu.



ments of celts, 2 projectile points (plate 7*d*), 2 drills or reamers (plate 7*c,e*), and 17 chipped scrapers (plate 7*a-b*). The majority of the chipped implements are made of obsidian, though the presence of a few chips of flint show that this material was used. The celt fragments are small chips of polished diorite, too small to indicate the dimensions of the tool. One lump of sponge iron (411643, plate 7*f*) found in the humus seems to be contemporary with the housepit, but no other evidence of iron working was found in the excavation. Two postmolds found in the subsoil outside the housepit were vertical, and do not appear to have been part of the house structure.

Miscellaneous sherds from the trench outlining housepit 1 consist of the following:

<i>Type</i>	<i>Rims</i>	<i>Body</i>	<i>Basal</i>	<i>No. of vessels</i>
Yoichi	0	13	0	3
Nopporo (411633)	36	34	13	21
Ebetsu (411632)	12	13	0	2
Haji	3	15	0	2

Of the 13 bases, 12 are cordmarked and are 3 to 3½ inches in diameter. The remaining one is plain, 3 inches in diameter.

Vessel 1 (411637) is an incomplete, nonrestorable bowl made of sandy clay containing many fiber casts. The paste is yellow and buff. It is a straight-sided bowl with a rounded bottom. The vessel is cordmarked over the entire outer surface. Height of the bowl is in excess of 8 inches. Rim diameter is 9 inches, while the base is about 3 inches across. The rim is straight and pointed in cross-section. Short impressions of twisted cords are found on the inner edge of the rim. Perforations for repair are present on each side of a break in the side wall.

Vessel 2 (411635) is a small vase-shaped cup 1½ inches high. It is made of sandy clay and is unevenly fired. Basic color is a reddish orange, but black smoke clouding covers about one half of the surface. The base is subconoidal. Sides flare outward to a maximum diameter of 1¾ inches at a height of 1 inch. At the shoulder thus formed, the sides narrow abruptly to a nearly vertical neck ½ inch high. Rim diameter is 1 inch. The cup appears to have been molded over a fingertip. The outer surface is plain, though the neck is decorated with two parallel incised lines, which cut across a zigzag line to form equilateral triangles between the shoulder and the rim. The rim is straight and rounded in cross-section.

Vessel 3 (411638) is a restorable bowl 5 inches high bearing at least two crenelations 1 inch higher. The shape is that of a wide-mouthed bowl with a flat bottom and straight, sloping sides. The paste is a sandy clay of yellow and buff color. The entire outer sur-

face is cordmarked, as is the base and the upper  $\frac{1}{2}$  inch of the inner surface. The rim is straight and pointed in cross-section. The one crenelation present bears five rounded gashes. Rim diameter is  $8\frac{1}{2}$  inches, and the base is 3 inches across. Perforations for repair are present.

Vessel 4 (411639) is an incomplete, nonrestorable vase at least 12 inches high. Sides are straight and are nearly vertical. The oral diameter is 15 inches while the base is 4 inches across. The entire outer surface including the base is cord marked. The rim is straight and pointed in cross-section. No design is found, but the rim bears an unknown number of small ( $\frac{1}{2}$ -inch high) plain crenelations. Perforations for repair are present.

Vessel 5 (411634) (plate 8*b*) is an incomplete, nonrestorable vase of the type known to Japanese archeologists as "Satsumon." Since the base is missing, the exact height and basal type cannot be determined. Oral diameter is  $10\frac{3}{4}$  inches, and the height is in excess of 10 inches. The vase shows coil joints indicating the method of manufacture. The paste is sandy clay, well fired, and yellow, buff, and brown in color, with some soot encrustation. Outer surfaces are plain, but show marks of having been scraped vertically with a rough-edged scraper. Maximum body diameter is 7 inches, with a slight constriction to  $6\frac{3}{4}$  inches in the neck. The rim flares outward and then upward to a vertical, rounded rim. Design is found in two areas: the shoulder and the outer edge of the rim. On the shoulder are two discontinuous incised lines  $\frac{1}{4}$  inch apart. Immediately below the lower line is a row of  $\frac{1}{4}$  inch long gashes impressed into the clay at an angle of about 30 degrees from vertical, sloping from lower left to upper right. The design at the rim is a 1-inch band of three incised lines, spaced  $\frac{1}{4}$  inch apart with a row of gashes immediately below each line. The upper and lower gashes slope from lower left to upper right, while the center row slopes in opposite directions.

Upon completion of the trench outlining the house, the house proper was completely cleared of ash and humus. As no trace was found of a doorway, the house must have been entered through the roof. A small burned area of the floor on the east side at the wall was undoubtedly the hearth. It was connected with a collapsed structure of clay, which extended outside the housepit wall. The exact nature of this structure could not be determined, but it appears to have been either a smoke hole, or an air vent lined with clay. I found similar "chimneys" in house pits in the Anenuma-Ogawara area of Aomori Prefecture, Honshu (MacCord, 1955, pp. 150-151).

Midway along the south wall, and 1 foot inside the edge of the house was a small rectangular pit of unknown use. It measured 10 by 18 inches, was 6 inches deep, and was lined with small marsh

reeds (Japanese-Yoshi), which had been converted into charcoal. No sherds were found in or near this small pit.

At many places around the sides of the house floor and at several places near the center were found charred wood representing fallen roof timbers. Four interior supporting posts for the roof were evidenced by the postmolds equally spaced in the four corners of the pit. These molds were from 18 to 20 inches deep and were rounded on the bottom. The postholes were about 1 foot in diameter, while the actual post mold was only 5 to 6 inches thick.

The location of the supporting posts and the orientation of the charred roof timbers indicate that the roof framing consisted of a square lintel connecting the tops of the four posts. The roof members were undoubtedly poles laid from the ground surface over the lintels and meeting in the center to form a four-sided pyramid. That this roof was covered with thatch is indicated by the presence of charred marsh reeds in quantity in the floor debris.

Since so much of the roof structure has been converted to charcoal, it seems that the roof must have been covered with earth that smothered the fire when the roof collapsed. The few Jomon Period sherds found in the pit fill could have come from the earth used on the roof. The earth had probably been scraped up from the immediate vicinity of the house. No trace of a prepared floor was found, nor were there any subfloor storage pits or additional hearths.

Cultural material found in the fill of the housepit was not plentiful. Stone implements (411646) consist of three retouched flakes of obsidian, apparently used as scrapers. Two basal halves of vessels of the Haji type (411644), and nine miscellaneous sherds (411645) of the same type indicate the occupants of the house. Eight Jomon Period sherds of the Nopporo type were found scattered through the fill dirt. The two fragmentary Haji vessels are flat-bottomed vases with flaring sides. One base is 3 inches and the other  $3\frac{3}{4}$  inches in diameter. Both are marked with the impressions of a bamboo leaf, possibly *Sasa palmata* (identification by Dr. F. A. McClure, Department of Botany, U.S. National Museum).

Apparently in the manufacture of the vases, the molded base of moist clay was placed on a section of leaf, and as coils were added to build the sidewalls, the leaf was turned, thus serving as a turntable, and possibly in imitation of the potters' wheel. The clay of the two fragmentary vases is a pale yellow with occasional blotches of red or brown, apparently representing firing inequalities. Temper in both vases is quartz sand. Both vases are plain, though they show vertical marks of scraping of exterior surfaces and similar horizontal marks on inner surfaces.

A sample of the charcoal found on the floor of house 1 was collected for Carbon-14 dating. Dr. Meyer Rubin of the Low Level Radiation

Laboratory of the U.S. Geological Survey obtained the age of 1100  $\pm$  160 years (W-419).

A test trench 5 feet wide was dug from house 1 to house 2. This trench yielded no artifacts, but uncovering the subsoil revealed a shallow (24-inch deep) trench about halfway between the two houses, V-shaped in profile and running at right angles to the edge of the terrace. Due to insufficient time, this trench was not further explored, but it appears to have been a drainage ditch designed to receive and carry away water running off the roofs of the houses, and possibly to lower the water table in the vicinity of the pit dwellings.

The outlines of house 2 were traced by means of a trench similar to that around house 1. In the trench were found one triangular arrow-point of obsidian (411649), six retouched flakes of obsidian, one of flint, and one of chalcedony (411650). Sherds found show the following distribution and varieties:

<i>Type</i>	<i>Rims</i>	<i>Body</i>	<i>Basal</i>	<i>No. of vessels</i>
Yoichi	—	3	2	2
Nopporo	3	6	1	3
Ebetsu	3	12	—	3
Satsumon	2	27	2	2
Haji	1	33	2	2

One of the Satsumon rimsherds shows a support perforation just below the rim made before the pot was fired.

House 2, like house 1, was roughly square but slightly larger. The sides measured 27.5, 28, 27.5, and 30 feet. The floor of the pit was 36 inches from the present surface. No trace of a prepared floor was found, and no entrance way was visible. The fireplace was located on the south side, just west of center, and a collapsed clay extension outside the housepit wall was probably the remains of either an air vent or a smokehole. Three postmolds were found in the corners, but the fourth, if it existed, was missed. These postmolds were about 1 foot in diameter and extended into the subsoil for 2 feet. No sub-floor pits or similar features were found. As in house 1, large quantities of charred roof members were found on the floor, and the floor showed reddening by fire in several large irregular areas.

Artifacts found consisted of sherds and one obsidian flake scraper (411652). Sherds were found scattered throughout the fill, but one almost complete bowl was found at floor level only 2 feet from the hearth's edge. This bowl was found articulated, but was struck by a workman's shovel, and one piece was lost. Sherds of two other badly broken vessels were found concentrated in the southern half of the housepit, probably due to the proximity of the hearth.

The miscellaneous sherds found in the housepit show the following distribution and variety:



<i>Type</i>	<i>Rims</i>	<i>Body</i>	<i>Basal</i>	<i>No. of vessels</i>
Nopporo	1	25	3	3
Ebetsu	2	7	1	1
Satsumon	7	49	0	2

Vessel 1 from housepit 2 (411655) (plate 9) is an almost complete vase of Satsumon type. Since the base is missing, the exact height and base type cannot be determined. Overall height is in excess of 7 inches. The vase has expanding sides with a maximum diameter of  $5\frac{1}{2}$  inches, and a constricted neck having a diameter of 4 inches. The rim is strongly flared with an oral diameter of 5 inches. The paste is yellow clay containing a temper of fine quartz sand and minute flakes of obsidian. The exterior is plain except for vertical marks of scraping. No design is found on this vessel.

Vessel 2 (411654) (plate 10*a*) is a small, shallow bowl made on a potters' wheel. The characteristic spiral striations on the base (plate 10*b*) show the technique of severing with a cord the shaped bowl from the pedestal of clay from which the vessel was formed. The bowl is  $2\frac{3}{8}$  inches high and has a flat base and straight, expanding sides. Oral diameter is  $4\frac{7}{8}$  inches while the base is  $1\frac{1}{8}$  inches across. The clay is yellow and red. Tempering is primarily quartz sand. The use of a high-firing temperature is indicated by the glazed surface area roughly  $\frac{3}{4}$  inch square on one side. Since other vessels at the site were made by the coiling method, the bowl is probably an importation, though from what source is not known.

Vessel 3 (411651) is an incomplete shallow bowl apparently hand-molded. Height is  $1\frac{1}{2}$  inches, oral diameter is 4 inches, and basal diameter is  $1\frac{3}{4}$  inches. The clay is yellow with some areas of black clouding. The temper is quartz sand with some obsidian flakes.

### Miscellaneous Sites

In addition to the excavations carried out at the Taniguchi, Uenae, and Tanaka Sites, surface collections were made at a number of other sites in the Ishikari Plain region of Hokkaido. These sites yielded materials representing most of the cultural periods of Hokkaido and supplementing the data obtained from the excavations. The following brief descriptions of the sites and the materials collected at each are arranged according to a cultural sequence based on the excavations and on presumably parallel cultural evolution in other parts of Japan.

#### Preceramic (?) Period

One mile east of the city of Iwamizawa at a place called Higashi-Tonebetsu is a hilltop on which hundreds of obsidian and flint chips



were found, as well as occasional perfect or broken artifacts of stone. No pottery was found, either on the site or in its immediate vicinity. This lack of pottery indicates that the site is a preceramic horizon or that the site is a workshop without adjacent habitation sites. Collection from the site consists of:

<i>Item</i>	<i>USNM No.</i>	<i>Quantity</i>	<i>Plate No.</i>
Projectile, triangular, obsidian	411685	1	11e
Projectile, lanceolate, obsidian	411685	2	11f
Projectile, elongate, tanged obsidian	411685	2	11d
Projectile, stubby, tanged obsidian	411685	3	11c
Scraper knife, flint	411684	1	11b
Celts, broken and incomplete	411680	5	—
Chisels, polished	411683	3	11a

The celts and chisels are made from locally obtained boulders of glaucophane schist, or phyllite, both forms of metamorphosed shale (identified by Mr. James H. Benn, formerly of the U.S. National Museum). The obsidian is both of the speckled type and the plain type, which is translucent on thin edges.

#### Early Jomon Period

At Sunahama, located on the right bank of an abandoned channel of the Ishikari River, 1.8 miles west of Horomui, Ebetsu Township, is a small outcrop of cultural remains at a depth of 20 feet below the present surface of the flood plain. No excavations were undertaken, but a small collection consisting of sherds and two small triangular arrowpoints was made where these artifacts protruded from the deposit. The sherds appear to represent the cylindrical ware of the Early Jomon Period (Groot, 1951, p. 39). They are straight sided, flat bottomed, and cord marked over the entire outer surface. The paste is tempered with sand containing flakes of obsidian, and the ware is gritty to the touch. Designs occur only adjacent to the rim and consist of lines of pseudocord impressions parallel to and, rarely, at right angles to the lip. Rims are straight and rounded in cross-section, while six out of the seven rims show a notched rim top. Three sherds (411666) from this site are illustrated in plate 12a-c. The two arrowpoints found are of obsidian (411665).

#### Middle Jomon Period

One mile north of the town of Shimamatsu, on the road to Hiroshima, is a small site lying on a hill just north of an unnamed creek that flows into the Shimamatsu River. Surface indications of occupancy occur over a 10-acre tract and consist of chips, artifacts, and an occasional sherd. All sherds are of the Yoichi type attributable to the Middle Jomon Period. Fragments of grooved mullers are plentiful. Artifacts collected are:

<i>Item</i>	<i>USNM No.</i>	<i>Quantity</i>	<i>Plate No.</i>
Celts, pecked, unfinished	411657	2	—
Celts, polished	411657	2	—
Chisel, double-ended	411663	1	13c
Knives, tanged, flint	411661	11	13, a-b, d
Scrapers, flint flake	411660	1	—
Scrapers, obsidian flake	411660	1	—
Projectiles, lanceolate, obsidian	411658	2	—
Projectiles, stemmed, flint	411662	1	13c

On the property of Mr. Matsushima Saichi at the highest point of the hill mass just east of the town of Noboribetsu is a shellheap about 150 feet in diameter. According to Mr. Saichi, it is about 5 feet thick at the center and contains shells, bones, sherds, and earth mixed throughout. No excavation was undertaken, but a small surface collection was made. No sherds were collected, but the few seen appeared to be of the Middle Jomon Period. Stone artifacts collected are:

<i>Item</i>	<i>USNM No.</i>	<i>Quantity</i>	<i>Plate No.</i>
Muller, grooved	411671	1	14
Knives, tanged, flint	411667	2	—
Scraper, flint flake	411667	1	—
Projectile, stemmed, flint	411668	2	—
Abrader, sandstone	411670	1	—
Chisel, phyllite	411669	1	—

The chisel collected is  $3\frac{3}{4}$  inches long,  $\frac{1}{4}$  inch thick, and  $\frac{7}{8}$  inch wide.

At Tsuishikari, 1 mile west of the town of Ebetsu is a sandy hill bordering the Toyohira River just south of its confluence with the Ishikari River. This sandy eminence is probably part of an ancient sand-dune system. On this hill Japanese archeologists excavated many Ainu graves. These graves were not old, some being as recent as the middle of the 19th century. The graves yielded human bones in excellent condition, accompanied by iron swords and kettles, glass beads, brass wire ornaments, and other trinkets obtained by the Ainu from trade with the Japanese. In the topsoil between the graves and in some instances included in the backfill of the graves were found Jomon Period sherds and stone artifacts. During the present investigations, a 10-foot square test was dug to hardpan, but no graves or other features were met. In the topsoil of the test square and on the surface of the site were found the following:

<i>Item</i>	<i>USNM No.</i>	<i>Quantity</i>
Muller, grooved	411691	1
Celt, perfect	411689	1
Celts, broken	411689	3
Abrader, sandstone	411690	1
Scraper, flint	411688	1
Projectile, triangular, obsidian	411687	1
Sherd, base, Jomon Period	411686	1

### Later Jomon Period

In the town of Hiroshima, east of Sapporo, is a rather large site on a hilltop north of the small stream that passes through the center of the town. In fields behind a large shrine and across from the town's primary school is a portion of a site containing hundreds of sherds and numerous stone artifacts and chips. Recent Ainu graves intrusive to the site yield glass beads, iron swords, etc., of Japanese origin. No excavation was made at this site, but surface collecting produced the following:

<i>Item</i>	<i>USNM No.</i>	<i>Quantity</i>	<i>Plate No</i>
Abrader, sandstone	411675	1	—
Hammerstone, jasper nodule	411676	1	—
Celt, broken	411674	1	—
Drill, T-shaped, flint	411679	1	—
Scraper, triangular, obsidian	411673	1	—
Arrowpoints, triangular, obsidian	411678	1	—
Arrowpoints, stemmed, obsidian	411678	1	—
Arrowpoints, stemmed, flint	411673	1	—
Sherds, rim, Nopporo type	411677	14	12d-h
Sherds, body, Nopporo type	411672	2	—
Sherds, basal, Nopporo type	411672	2	—

### Summary

In summing up, I must first express the hope that the findings reported herein will stimulate and challenge others to enter the field of Japanese archeology. Additional research in this hitherto almost unexplored area will, no doubt, produce results that will contribute much to our knowledge of the prehistory of the entire Far East and north Pacific region, including the Bering Strait approaches to North America.

The stratigraphic evidence and the Carbon-14 dates from the three excavation sites demonstrate that Hokkaido has been the setting since at least 2000 B.C. for a sequence of cultures almost identical to that of Honshu. The many similarities in ceramics, stone implements, pit houses, and the hint of iron working at the Tanaka Site, as compared with the Ogawara Pit House Culture of northern Honshu, permit the conclusion that the people responsible for both sites were identical culturally and probably racially. Such a long time span with its numerous close parallels indicates frequent cultural contacts, if not actual migrations and intermarrying of the peoples of the two islands.

The indications of a nonceramic period in Hokkaido, while not conclusive, hint of a far longer occupation there by man before 2000 B.C. How much longer is unknown at this time. Recent finds on Honshu prove a preceramic occupation there, and more thorough search of Hokkaido may demonstrate a similar situation in the northern island.

The stemmed arrowpoint illustrated in plate 13*e* is identical to many found in America, and Japanese archeologists refer to it as the "American Indian type." Such stemmed points of flint are more frequent in collections of stone implements from Sakhalin than from Hokkaido, and they are almost never seen in Honshu collections. This distributional pattern indicates a probable dispersion from a source common both to America and Japan—probably northeastern Siberia. This problem must await further search on the mainland before it can be solved.

The identity of the people responsible for the Jomon Period materials and for the protohistoric Tanaka Site materials remains problematical at this time. I suspect that the people were of the same racial stock as the modern Japanese, but I cannot now prove this assumption.

The role of the modern Ainu and his ancestors in this archeological picture is also still too obscure for any positive statement. The Ainu graves at Ebetsu and Hiroshima and those adjoining the Tanaka Site reportedly have yielded intact skeletal material and grave goods of such recency that they can with certainty be dated within the past century or so.

During my explorations on Hokkaido I saw no archeological site that I could with certainty identify with prehistoric Ainu. Possibly the culture of the Ainu in early times was such that nothing but stone implements could survive. If so, this fact would account for the non-ceramic sites on Hokkaido. We must, however, await more thorough stratigraphical explorations of the shell mounds, caves, and other sites on Hokkaido for answers to this puzzling problem.

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